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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,428	07/21/2003	Ligang Lu	YOR920030210US1	6431

7590 07/09/2008

Paul D. Greeley, Esq.
Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
10th Floor
One Landmark Square
Stamford, CT 06901-2682

EXAMINER	
ANYIKIRE, CHIKAODILI E	
ART UNIT	PAPER NUMBER
2621	
MAIL DATE	DELIVERY MODE
07/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/624,428	LU ET AL.	
	Examiner	Art Unit	
	CHIKAODILI E. ANYIKIRE	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This application is responsive to application number (10624428) filed on July 27, 2003. Claims 1-10 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 13, 2008 has been entered.

Argument 1: The applicant argues that the reference does not disclose prediction data (Amendment of 06/13/08, pg 7 Ln 6-8). The examiner respectfully disagrees. The prior art teaches multiple memory and buffers in this case the FIFO buffer would serve as the primary buffer. The applicant should notice the flow of data in the I-frame processing versus MC data, which discloses storing blocks in an external memory when processing MC data and discloses a buffer memory when dealing with intra-picture (I-picture); (Yoshioka et al, Col 11 Ln 39-67). The MC data is the prediction data, but also even if the applicant was accurate in his argument about current data, prediction data consist of current data which in the claim language states, "resides in a primary memory in part or in whole".

A detailed description of the newly amended claims as follows below.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 2 rejected under 35 U.S.C. 102(b) as being anticipated by Yoshioka et al (US 6,310,921).

As per **claim 2**, Yoshioka et al disclose a power aware decompression method for decoding a predicatively encoded data stream, comprising:

(a) generating a first selection signal which signals whether prediction data for prediction resides in primary memory in part or in whole (Fig 4; Col 11 Ln 13- 28; prediction data is made up of current data and therefore at least in part contains the prediction data, but also the FIFO buffer stores the compressed video and audio data which includes the motion compensated data);

(b) if the first selection signal indicates that a portion of the said prediction data or the whole of the said prediction data is not present in primary memory (Fig 4, 4-6; Col 12 Ln 1-21 and Col 13 Ln 53-Col 14 Ln 9):

i. generating a second selection signal, based on an estimate of the future needs of the prediction process, to signal that portion of the primary memory where the prediction data, which is not already present in primary memory, should reside (Figs 4-6; Col 12 Ln 1-21), and

ii. transferring said prediction data that is not already present in primary memory, from secondary memory to that portion of the primary memory indicated by the second selection signal (Figs 4-6 and 10; Col 11 Ln 13- Ln 41 and Col 12 Ln 1-Col 13 Ln 10), and

(c) generating a prediction signal by manipulating said prediction data residing in primary memory (Fig 4-6 and 10; Col 11 Ln 30- Ln 41 and Col 14 Ln 10-48); and

(d) using said prediction signal to provide motion compensation in a decode of said predicatively encoded data stream (Col 11 Ln 38-41 and Col 14 Ln 35-45; the prior art teaches that the motion compensation is performed in a prediction signal is created).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1, 3-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogenboom et al (US 5,675,387) in view of Yoshioka et al (US 6,310,921).

As per **claim 1**, Hoogenboom et al disclose a decoding power aware encoding method for generating a predicatively encoded data stream, in which predictions, that result in a reduction in the amount of data transferred from the secondary memory to primary memory during the decoding process, are favored, said method for favoring certain predictions comprising:

(a) a model (Fig 1) for transfer of data from secondary memory (Fig 1, 22 and 30) incorporating a memory management in the decoding process (Col 5 Ln 53-61 and Col 6 Ln 56- Col 7 Ln 5);

(b) a scheme for weighting the relative merits of favoring a certain prediction and the associated loss in compression gain (Col 11 Ln 35- Col 12 Ln 2), and

(c) based on said weighting scheme, choosing a particular prediction from the candidates allowed by the compression scheme (Col 11 Ln 66- Col 12 Ln 2; the prior art explains the motion vector and the factor being scaled with 2).

Hoogenboom et al disclose a memory management model that reduces the number of access to the secondary memory (DRAM 22), which will result in a reduced power decoding (Col 3 Ln 62-67).

However, Hoogenboom et al does not explicitly teach using a primary memory in addition to the secondary memory and conventional buffer memories.

In the same field of endeavor, Yoshioka et al teach utilizing primary memory (on-chip memory) in addition to the internal memories as a primary memory (Fig 4, 4).

Therefore, it would have been obvious to one of ordinary skill in the art to have modified the invention of Hoogenboom et al with the invention of Yoshioka et al to include the primary memory (on-chip memory) in the memory management system of Hoogenboom et al. The advantage is the modification allows the invention to reduce the number of access to the external memory resulting in a decoding system with lower power consumption.

As per **claim 3**, Hoogenboom et al disclose a method for decoding a coded data stream comprising:

(a) processing the coded data stream to produce outputted decoded data frames (Fig 1, compressed bitstream 4 has been processed to produce output video frames 38);

(b) transmitting signals to and receiving signals from an external memory for storage and retrieval of previously decoded reference data frames (Fig 1, 22; Col 5 Ln 53- Col 6 Ln 4 and Col 6 Ln 56-59).

(c) transmitting signals to and receiving signals from a memory manager for retrieval of data frames being decoded currently and selected ones of said previously decoded reference data frames (Fig 1, 30; Col 5 Ln 53-Col 6 Ln 4, Col 6 Ln 36-38 and 56-59)

(d) searching said primary memory for a best match between a current one of said data frames and said previously decoded data frames, wherein step (a) uses best match to provide motion compensation (Col 6 Ln 36-55; the prior art teaches using a reference frame that is necessary to reconstruct an image which concludes that it would

be the best match to reconstruct an image; these techniques are well-known in the art of video coding).

However, Hoogenboom et al does not explicitly teach (c) transmitting signals to and receiving signals from a primary memory for storage and retrieval of data frames being decoded currently.

In the same field of endeavor, Yoshioka et al teach (c) transmitting signals to and receiving signals from a primary memory (Fig 4, 3 and 4) for storage and retrieval of data frames being decoded currently (Col 12 Ln 8-33 and Col 13 Ln 11-30).

Therefore, it would have been obvious to one of ordinary skill in the art to have modified the invention of Hoogenboom et al with the invention of Yoshioka et al to include the primary memory (on-chip memory) in the memory management system of Hoogenboom et al. The advantage is the modification allows the invention to reduce the number of access to the external memory resulting in a decoding system with lower power consumption.

As per **claim 4**, Hoogenboom et al disclose a system for decoding a coded data stream comprising:

(a) a processor for that outputs the decoded data frames (Fig 1, compressed bitstream 4 has been processed to produce output video frames 38);

(b) an external memory (Fig 1, element 22);

(c) an internal primary memory having a high speed access relative to a lower speed access of the external memory (Fig 1, element 22 and element 30; Col 6 Ln 15-35 and Col 7 Ln 12-31; DRAM 22 maybe provided as internal memory within the video

decomposition processor and is known to have a faster access speed than the external memory), and

(d) a memory management manager (Fig 1, element 30) that decreases an amount of traffic to the external memory (Fig 1, 22) so as to provide better real-time performance and power saving by a connection arrangement for transmissions from said processor to the external memories and said internal primary memory, wherein said internal primary memory is dedicated to a motion compensation function of data decoding (Fig 1, element 22; Col 3 Ln 39-67).

However, Hoogenboom et al does not explicitly teach an internal primary memory having high speed access relative to the external memory's speed.

In the same field of endeavor, Yoshioka et al teach utilizing an internal memory having high speed access relative to the external memory's speed (Fig 4, element 4; Col 12 Ln 8-33 and Col 13 Ln 11-30).

Therefore, it would have been obvious to one of ordinary skill in the art to have modified the invention of Hoogenboom et al with the invention of Yoshioka et al to include the primary memory (on-chip memory) in the memory management system of Hoogenboom et al. The advantage is the modification allows the invention to reduce the number of access to the external memory resulting in a decoding system with lower power consumption.

As per **claim 6**, Hoogenboom et al disclose a system as defined in claim 4, wherein the processor receives the data stream at its input, and has output respectively connected to the external memories(Fig 1, 22) and a further output providing decoded

data frames (Fig 1, compressed bitstream 4 has been processed to produce output video frames 38).

However, Hoogenboom et al does not explicitly teach internal memories.

In the same field of endeavor, Yoshioka et al teach internal memories (Fig 4, 4; Col 12 Ln 8-33 and Col 13 Ln 11-30).

Therefore, it would have been obvious to one of ordinary skill in the art to have modified the invention of Hoogenboom et al with the invention of Yoshioka et al to include the primary memory (on-chip memory) in the memory management system of Hoogenboom et al. The advantage is the modification allows the invention to reduce the number of access to the external memory resulting in a decoding system with lower power consumption.

Regarding **claim 7**, arguments analogous to those presented for claim 4 are applicable for claim 7.

As per **claim 10**, arguments analogous to those presented for the rejection of claim 3 are applicable to the rejection claim 10.

Furthermore, Yoshioka's memory controller 6 (Figs 4 and 10) controls the amount of traffic to the external memory.

8. Claims 8 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US 5,675,387) in view of Yoshioka et al (US 6,310,921).

As per **claim 8**, Lee et al disclose a system for encoding an input data frame comprising:

(a) a memory for storing data reference frames (Fig 1, 16; Col 4 Ln 48-63),

(b) a motion estimator for receiving an input frame and for searching to find the best match between an input frame and an area in a reference frame (Fig 1, 20; Col 4 Ln 1-9 and Col 4 Ln 64- Col 5 Ln 7);

(d) a motion vector selector coupled to the output of the motion estimator (Fig 8, 106, 108, and 110; Col 9 Ln 59- Col 10 Ln 65);

, and

(e) a quality and rate controller coupled to the motion vector selector (Fig 8, 100, 102, 104; Col 9 Ln 59- Col 10-65).

However, Lee et al does not explicitly teach a (c) primary memory model coupled to the motion estimator.

In the same field of endeavor, Yoshioka et al teach a (c) primary memory model (Fig 4, 4) coupled to the motion estimator (Fig 4, 7; Col 13 Ln 11-30).

Therefore, it would have been obvious to one of ordinary skill in the art to have modified the invention of Lee et al with the invention of Yoshioka et al to include the primary memory (on-chip memory) in the memory management system of Hoogenboom et al. The advantage is the modification allows the invention to reduce the number of access to the external memory resulting in a decoding system with lower power consumption.

As per **claim 9**, Lee et al disclose a system for encoding a data frame as defined in claim 8 further comprising a motion vectors module for determining the motion

vectors based on the current block and the best matched candidate (Fig 7; Col 8 Ln 7-67).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is (571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621
/CEA/